



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/033,573	11/02/2001	Graham Ross	018190-309	9221

7590

04/07/2003

James W. Peterson  
BURNS, DOANE, SWECKER & MATHIS, L.L.P.  
P.O. Box 1404  
Alexandria, VA 22313-1404

EXAMINER

BARTH, VINCENT P

ART UNIT

PAPER NUMBER

2877

DATE MAILED: 04/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/033,573

Applicant(s)

ROSS, GRAHAM

Examiner

Vincent P. Barth

Art Unit

2877

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 02 November 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 November 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Drawings***

1. The Drawings are objected to for some minor omissions of reference numbers, such as in Fig. 1 which is missing identifying numbers for the tip 41, the shaft 44, the fiber 45, all of which are discussed in the Specification at page 8. Additional omissions appear throughout, another example of which includes the pivot plate 111 described at pages 8 and 9. Pursuant to MPEP §1.84(p)(5), all reference characters in the Specification must appear in the Drawings, as well as the converse. If the Application is to proceed, all such omissions must be corrected, and the objections will not be held in abeyance.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 22 and 23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Referring to Claim 22, indefinite under §112, for lacking an antecedent basis for the feature described as "said reflective device". See MPEP §2173.05(e). However, the claim has been discussed below as it may best be understood. Moreover, the fourth paragraph of 35 U.S.C. §112 provides that, "A claim in dependent form shall be construed to incorporate by

Art Unit: 2877

reference all the limitations of the claim to which it refers". Accordingly, Claim 23 inherits the §112 second paragraph rejection of Claim 22, and is therefore rejected on this basis as well.

However, Claim 23 has also been discussed below as it may be best understood.

5. Referring to Claim 23, the claim is drawn to a method, but depends from Claim 20 which describes a device. The Examiner believes this is merely a typographical error, which is easily remedied. Nevertheless, the claim is impermissibly drafted to include more than one statutory class of invention, and is thus a hybrid claim. See MPEP §2173.05(p). However, the claim has been discussed below as it may best be understood if it were a typographical error, in which the claim was intended to depend from Claim 22.

### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 1-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cannon, U.S. Patent Pub. No. 2001/0024273 (27 Sept., 2001), in view of Heffels, et al., U.S. Patent No. 6,535,283 (18 Mar., 2003, filed 3 Dec., 1999).

8. Referring to Claim 1, Cannon discloses a device for inspecting concealed solder joints, with an image receiving unit in the form of an ocular unit 3 (see Fig. 1 and pg. 4, para. 45), an

image transmitting unit 4 (see Fig. 1 and pg. 4, para. 45), and two tip assemblies 23 and 2 (see Fig. 1 and pg. 4, para. 45). The probe tip in Cannon may be configured with a reflecting portion in the form of a prism for transmitting or receiving light (see Fig. 3 element 26; and see Fig. 2 element 9). Thus, illuminating and image receiving occurs through such prisms. Cannon does not explicitly disclose the use of apertures on said probe tip to adjust the lighting and imaging process. Heffels discloses a probe tip system for inspecting fluids, and in which a fiber optic means is coupled to a probe tip comprising a prism (col. 4, ln. 21; col. 6, lns. 19-24), and which may have in the probe tip at least one aperture 31 (see Fig. 2 and col. 9, ln. 64) for at least light transmission. Heffels does not explicitly disclose a plurality of apertures, for example, such that an additional image receiving aperture is disposed adjacent to the light emitting aperture.

However, since one aperture has been disclosed if desired, it would have been obvious to those skilled in the art at the time of the invention to include additional apertures as needed. See MPEP §2144.04(VI)(B), citing, In re Harza, 274 F.2d 669, 124 USPQ 378 (CCPA 1960) (mere duplication of parts has no patentable significance unless a new and unexpected result is produced.). Cannon and Heffels are analogous art, since they are from a similar problem solving area, in that each involves configuring a probe tip for optical imaging. See Medtronic, Inc. v. Cardiac Pacemakers, 721 F.2d 1563, 1572-1573, 220 USPQ 97, 103-104 (Fed. Cir., 1983). The motivation for combining the references would have been to gain the otherwise known properties of apertures. Accordingly, it would have been obvious to those skilled in the art to combine the references, at the time of the invention, in order to obtain such benefit. In the alternative, the use of fixed and adjustable apertures to gain appropriate optical effects has been generally known in the art. See MPEP §2144.03.

9. Referring to Claim 2, Cannon discloses that a camera may be connected either directly or indirectly to the ocular element 3 (pg. 3, para. 29).

10. Referring to Claims 3 and 4, Cannon discloses that the transmitting element may have a series of lenses which transmit and eventually magnify the image (pg. 4, para. 45).

11. Referring to Claims 5, 9 and 11, Heffels discloses that the probe tip may have at least one aperture 31 (see Fig. 2 and col. 9, ln. 64) for at least light transmission. Heffels does not explicitly disclose a plurality of apertures, for example, such that an additional image receiving aperture is disposed adjacent to the light emitting aperture. However, since one aperture has been disclosed if desired, it would have been obvious to those skilled in the art at the time of the invention to include additional apertures as needed. See MPEP §2144.04(VI)(B) and the discussion above regarding same.

12. Referring to Claims 6, 7 and 12, Cannon discloses a bracket 29 configured to hold one of the fiber optic probe tip assemblies 28 such that said probe tip 23 may reach under the substrate (see Fig. 1). The fiber tube 28 appears to be perhaps flexible enough for bending, but rigid enough to be pivoted if desired, since it would likely be constructed of braided wire. The fiber tube 28 is attached to the bracket 29 by a clamping member 31 (see Fig. 1), which is drawn and described generically such that it may certainly be affixed tightly in a desired pivoting position, including such angles as 0 to 5 degrees.

13. Referring to Claim 8, Cannon discloses that the bracket 29 may be rotated with respect to the housing, which is perpendicular to the staging or substrate area (pg. 5, para. 51).

14. Referring to Claim 10, Cannon discloses that a camera may be connected either directly or indirectly to the ocular element 3 (pg. 3, para. 29). Connecting a display to such a camera

would have been obvious to those skilled in the art at the time of the invention based on the ubiquitous nature of such features, and the generally known developments state of the art in imaging. See *In re Raynes*, 28 USPQ at 1632, and MPEP §2144.03.

15. Referring to Claims 13 and 14, Cannon discloses that the tube leading to probe tip 23 is flexible (see Fig. 1), and contains fibers for light transmission or reception (pg. 5, para. 50).

16. Referring to Claim 15, Cannon discloses that light may be generated by a fiber, although not explicitly indicating that diodes may also be a suitable source. However, Applicant has not disclosed that such diodes function differently from the prior art in which fibers are used. In the case of Cannon, it appears that fibers are used merely as a convenience to have a signal light power source. Thus, the invention would perform equally well with either a diode or fiber.

Accordingly, it would have been obvious design choice to those skilled in the art at the time of the invention to modify the disclosure in Cannon to obtain the invention as claimed.

17. Referring to Claim 16, Cannon discloses a device for inspecting concealed solder joints, with an image receiving unit in the form of an ocular unit 3 (see Fig. 1 and pg. 4, para. 45), an image transmitting unit 4 (see Fig. 1 and pg. 4, para. 45), and two tip assemblies 23 and 2 (see Fig. 1 and pg. 4, para. 45). The probe tip in Cannon may be configured with a reflecting portion in the form of a prism for transmitting or receiving light (see Fig. 3 element 26; and see Fig. 2 element 9). Thus, illuminating and image receiving occurs through such prisms. Cannon does not explicitly disclose the use of apertures on said probe tip to adjust the lighting and imaging process. Heffels discloses a probe tip system for inspecting fluids, and in which a fiber optic means is coupled to a probe tip comprising a prism (col. 4, ln. 21; col. 6, lns. 19-24), and which may have in the probe tip at least one aperture 31 (see Fig. 2 and col. 9, ln. 64) for at least light

transmission. Heffels does not explicitly disclose a plurality of apertures, for example, such that an additional image receiving aperture is disposed adjacent to the light emitting aperture.

However, since one aperture has been disclosed if desired, it would have been obvious to those skilled in the art at the time of the invention to include additional apertures as needed. See MPEP §2144.04(VI)(B), citing, In re Harza, 274 F.2d 669, 124 USPQ 378 (CCPA 1960) (mere duplication of parts has no patentable significance unless a new and unexpected result is produced.). Cannon and Heffels are analogous art, since they are from a similar problem solving area, in that each involves configuring a probe tip for optical imaging. See Medtronic, Inc. v. Cardiac Pacemakers, 721 F.2d 1563, 1572-1573, 220 USPQ 97, 103-104 (Fed. Cir., 1983). The motivation for combining the references would have been to gain the otherwise known properties of apertures. Accordingly, it would have been obvious to those skilled in the art to combine the references, at the time of the invention, in order to obtain such benefit. In the alternative, the use of fixed and adjustable apertures to gain appropriate optical effects has been generally known in the art. See MPEP §2144.03. Cannon discloses that a camera may be connected either directly or indirectly to the ocular element 3 (pg. 3, para. 29).

18. Referring to Claim 17, Cannon discloses that the transmitting element may have a series of lenses which transmit and eventually magnify the image (pg. 4, para. 45).

19. Referring to Claims 18-21, Cannon discloses a bracket 29 configured to hold one of the fiber optic probe tip assemblies 28 such that said probe tip 23 may reach under the substrate (see Fig. 1). The fiber tube 28 appears to be perhaps flexible enough for bending, but rigid enough to be pivoted if desired, since it would likely be constructed of braided wire. The fiber tube 28 is attached to the bracket 29 by a clamping member 31 (see Fig. 1), which is drawn and described



generically such that it may certainly be affixed tightly in a desired pivoting position, including such angles as 0 to 5 degrees. Cannon further discloses that the bracket 29 may be rotated with respect to the housing, which is perpendicular to the staging or substrate area (pg. 5, para. 51).

20. Referring to Claim 22, Cannon discloses a device for inspecting concealed solder joints, with an image receiving unit in the form of an ocular unit 3 (see Fig. 1 and pg. 4, para. 45), an image transmitting unit 4 (see Fig. 1 and pg. 4, para. 45), and two tip assemblies 23 and 2 (see Fig. 1 and pg. 4, para. 45). The probe tip in Cannon may be configured with a reflecting portion in the form of a prism for transmitting or receiving light (see Fig. 3 element 26; and see Fig. 2 element 9). Thus, illuminating and image receiving occurs through such prisms. Cannon does not explicitly disclose the use of apertures on said probe tip to adjust the lighting and imaging process. Heffels discloses a probe tip system for inspecting fluids, and in which a fiber optic means is coupled to a probe tip comprising a prism (col. 4, ln. 21; col. 6, lns. 19-24), and which may have in the probe tip at least one aperture 31 (see Fig. 2 and col. 9, ln. 64) for at least light transmission. Heffels does not explicitly disclose a plurality of apertures, for example, such that an additional image receiving aperture is disposed adjacent to the light emitting aperture. However, since one aperture has been disclosed if desired, it would have been obvious to those skilled in the art at the time of the invention to include additional apertures as needed. See MPEP §2144.04(VI)(B), citing, In re Harza, 274 F.2d 669, 124 USPQ 378 (CCPA 1960) (mere duplication of parts has no patentable significance unless a new and unexpected result is produced.). Cannon and Heffels are analogous art, since they are from a similar problem solving area, in that each involves configuring a probe tip for optical imaging. See Medtronic, Inc. v. Cardiac Pacemakers, 721 F.2d 1563, 1572-1573, 220 USPQ 97, 103-104 (Fed. Cir., 1983). The

motivation for combining the references would have been to gain the otherwise known properties of apertures. Accordingly, it would have been obvious to those skilled in the art to combine the references, at the time of the invention, in order to obtain such benefit. Cannon discloses a bracket 29 configured to hold one of the fiber optic probe tip assemblies 28 such that said probe tip 23 may reach under the substrate (see Fig. 1). The fiber tube 28 appears to be perhaps flexible enough for bending, but rigid enough to be pivoted if desired, since it would likely be constructed of braided wire. The fiber tube 28 is attached to the bracket 29 by a clamping member 31 (see Fig. 1), which is drawn and described generically such that it may certainly be affixed tightly in a desired pivoting position, including such angles as 0 to 5 degrees. Cannon further discloses that the bracket 29 may be rotated with respect to the housing, which is perpendicular to the staging or substrate area (pg. 5, para. 51).

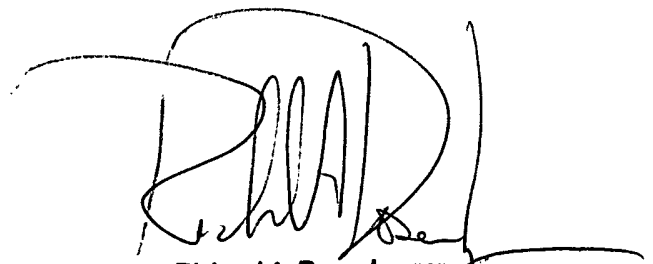
21. Referring to Claim 23, Cannon discloses that the probe tips 23 and 2 may be disposed opposite to each other to illuminate the soldering beads under the substrate (see Fig. 1).

### *Comments*

22. Note that the Cannon reference cited above has also been published in German with the following identifications: DE 198 47 913 A1 (6 Jun., 1999) and WO 00/23844 (27 Apr., 2000). Said publications will be furnished upon request if Applicant has difficulty otherwise obtaining the documents.

***CONCLUSION***

23. Applicants' Claims 1-23 are rejected based on the reasons set forth above.
24. Any inquiries concerning this communication from the examiner should be directed to Vincent P. Barth, whose telephone number is 703-605-0750, and who may be ordinarily reached from 9:00 a.m. to 5:30 p.m., Monday through Friday.
25. If attempts to reach the examiner prove unsuccessful, the examiner's supervisor is Frank G. Font, who may be reached at 703-308-4881.
26. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1782.



Richard A. Rosenberg  
Primary Examiner